

TWO NEW SPECIES OF *TARSONEMUS* (ACARI: TARSONEMIDAE)
ASSOCIATED WITH COMMERCIAL MUSHROOM PRODUCTION

Aagje Hill and Kenneth L. Deahl

Abstract.—Females of two new species of Tarsonemidae, *Tarsonemus mercedesae* and *T. lukoschusi*, associated with commercial mushroom production in Pennsylvania are described and figured.

A survey of mites associated with commercial mushroom production was made near Kennett Square, Pennsylvania. Two new species in the Tarsonemidae were found. The specimens described in this paper were collected from first-stage mushroom compost and horse manure outside mushroom houses. The terminology of Lindquist (1969) is used for the idiosomal and gnathosomal structures. The terminology of Suski (1966) is used for the chaetotaxy and solenidiotaxy of the legs. This work was done in collaboration with the Systematic Entomology Laboratory, IIBIII, Agricultural Research Service, U. S. Department of Agriculture, Beltsville, Maryland 20705.

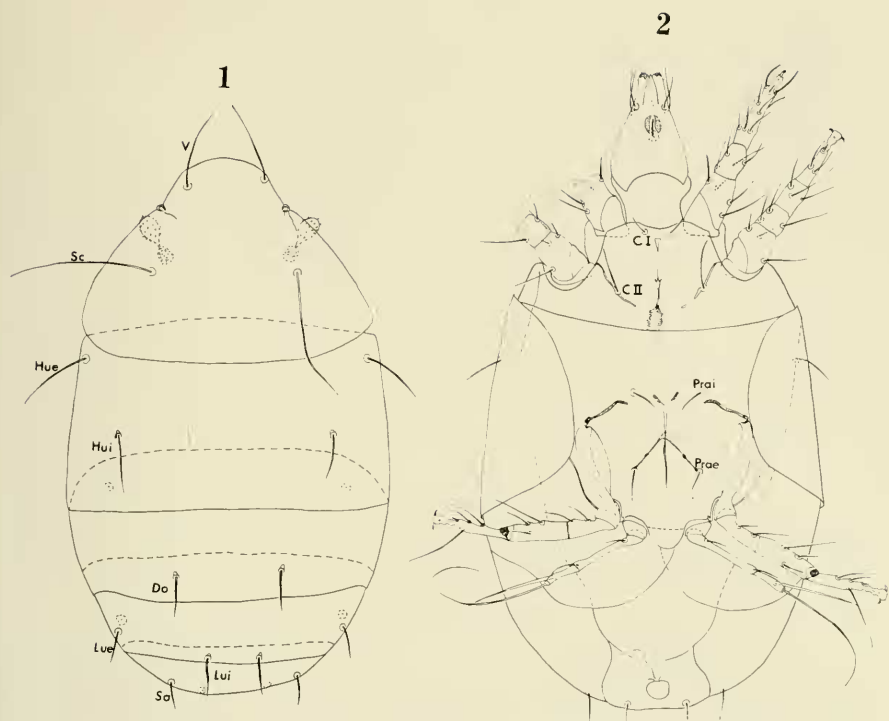
Tarsonemus mercedesae Hill and Deahl, new species
Figs. 1-4

Tarsonemus mercedesae can be distinguished from other species in the genus by the presence of a dark spot on the membrane between genu and tibiotarsus III. Only the female is known.

Gnathosoma (Fig. 2).—Pharynx short and slender, with a pair of distinct glandular structures posteriorly. Ventral and dorsal marginal setae subequal in length.

Dorsum (Fig. 1).—Body oval, broadest at metapodosomal area. Propodosomal shield subtriangular and partially covering gnathosoma. Shield somewhat less than $1.5\times$ as broad posteriorly as it is long medially. Sensilla spherical, finely spiculate and mostly covered by the propodosoma. Vertical setae (V) longer than distance between bases; scapular setae (Sc) almost $2\times$ as long as V. Marginal setae on tergum I subequal in length to V and longer than other hysterosomal setae; median setae on terga II and III equal in length, $\frac{1}{2}$ as long as marginal setae on tergum I and stronger than other dorsal setae; marginal setae on terga III and IV subequal in length and shorter and more slender than other dorsal setae. Pores on terga I, II and IV.

Venter (Fig. 2).—Anteromedian apodeme interrupted between coxae I and II and not connected with apodemes II; apodemes II slightly curved; posterior portion of anteromedian apodeme trifurcate anteriorly, with



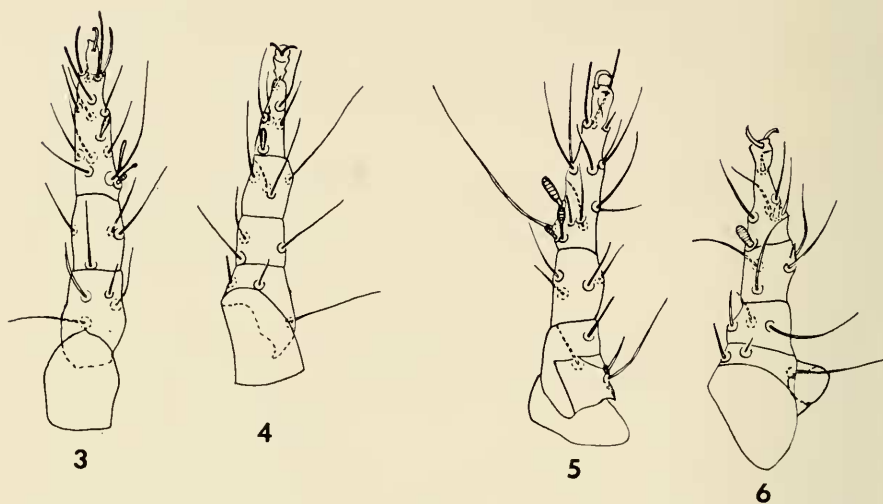
Figs. 1-2. *Tarsonemus mercedesae*, female. 1. Dorsal view; 2. Ventral view.

sclerotized area posteriorly. Coxal setae I less than $\frac{1}{2}$ as long as II, which are relatively long. Transverse apodeme complete. Apodemes III extend medially to posterior of coxal setae III and laterally to anterior extremities of coxae III; medial parts of apodemes III curved posteriorly; apodemes IV slender and connected with posteromedian apodeme, with median nodule; posteromedian apodeme slender, complete, anterior bifurcate and not strongly sclerotized. Posteromedial lobe between coxae IV broader than long and distally rounded. Genital-anal plate distinct and with 1 pair of short, slender setae.

Chaetotaxy and solenidiotaxy of legs.—Leg I (Fig. 3): Femur, genu, tibiotarsus: 4-4-8 + 4 solenidia + 4 eupathidia. Leg II (Fig. 4): Femur, genu, tibia, tarsus: 3-3-4-5 + 1 solenidion. Leg III (Fig. 2): Femorogenu, tibia, tarsus: 2-3-4. Leg IV (Fig. 2): Femorogenu 2, tibiotarsus 2.

Measurements of type-material.—Holotype: Idiosoma plus gnathosoma 179 μ long; idiosoma 92 μ wide. Idiosoma of paratypes (3) averages 169 (163-173) μ long and 93 (85-101) μ wide.

Deposition of type-material.—Holotype: Female, USNM, No. 3761 from



Figs. 3-4. *Tarsonemus mercedesae*, female. 3. Leg I; 4. Leg II. Figs. 5-6. *Tarsonemus lukoschusi*, female. 5. Leg I; 6. Leg II.

first-stage mushroom compost, P. Yeatman, Avondale, Pennsylvania, 13 October 1976, by A. Hill and K. L. Deahl. Paratypes: Three from horse manure, Keystone Mushroom Company, Coatesville, Pennsylvania 31 August 1976, by A. Hill, in U.S. National Museum of Natural History.

Etymology.—This species is named for Dr. Mercedes Delfinado, New York State Museum, Albany, New York.

Tarsonemus lukoschusi Hill and Deahl, new species

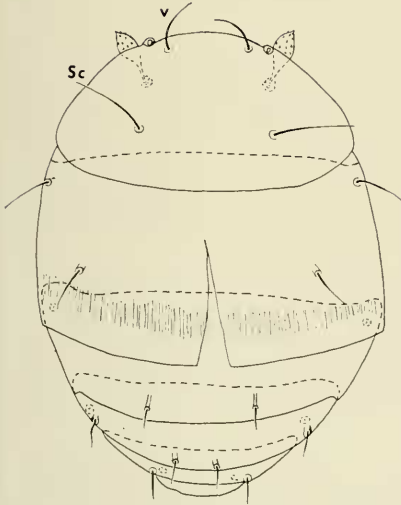
Figs. 5-8

Tarsonemus lukoschusi can be distinguished from other species in the genus by the presence of broadly lanceolate sensilla, previously found only in some species of *Stenotarsonemus*, such as *S. phyllophorus* (Ewing) and *S. laticeps* (Halbert) (R. Smiley, personal communication). Only the female of is known.

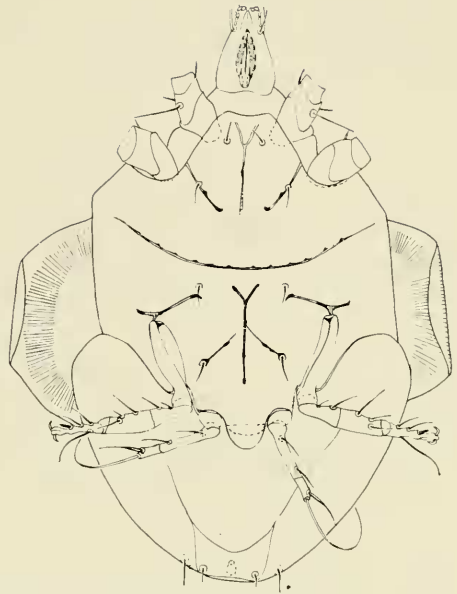
Dorsum (Fig. 7).—Body oval. Propodosomal shield sub-triangular, not covering gnathosoma. Vertical setae (V) shorter than distance between bases. Scapular setae (Sc) fine and $\frac{1}{3}$ longer than V. Sensilla broadly lanceolate with conspicuous spicules and partially covered by propodosomal shield. Dorsal hysterosomal setae simple. Setae on tergum I short and subequal in length; marginal setae on terga III and IV subequal in length. Three pairs of glandular openings on dorsum.

Venter (Fig. 8).—Apodemes I fused, Y-like, and connected with anteromedian apodeme; apodemes II not connected with anteromedian apodeme

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Figs. 7-8. *Tarsonemus lukoschusi*, female. 7. Dorsal view; 8. Ventral view.

and each with a medial and a distal nodule. Anteromedian apodeme weakened between apodemes I and II; posteriorly with diffuse sclerotization. Transverse apodeme is complete and irregular (as figured). Apodemes III extend medially to posterior of coxal setae III and laterally beyond coxal III; posteromedian apodeme bifurcate anteriorly; apodemes IV finer than III, with median nodule; coxal setae I, II, and III finer and shorter than IV. Posteromedial lobe between coxae IV about as broad as long. Genital-anal plate distinct and with 1 pair of short slender setae.

Chaetotaxy and solenidiotaxy of legs.—Leg I (Fig. 5): Femur, genu, tibio-tarsus: 4-4-11 + 3 solenidia + 3 eupathidia. Leg II (Fig. 6): Femur, genu, tibia, tarsus: 3-3-4-6 + 1 solenidium. Leg III (Fig. 8): Femorogenu, tibia, tarsus; 1-3-4. Leg IV (Fig. 8): Femorogenu 2, tibiotarsus 2. Femur II with large flange. On tibia II of holotype, protuberance appears spine-like; it appears as a protrusion in paratypes.

Measurements of type-material.—Holotype: Idiosoma plus gnathosoma 182 μ long and 101 μ wide. Idiosoma of paratypes (6) averages 163 (142-196) μ long and 92 (81-106) μ wide.

Deposition of type-material.—Holotype: Female, USNM No. 3760 from first-stage mushroom compost, P. Yeatman, Avondale, Pennsylvania, 13

October 1976, by A. Hill and K. L. Deahl. Paratypes: Two are in Acarology Laboratory, Ohio State University, Columbus, Ohio; 2 in Biosystematics Research Institute, Ottawa, Ontario, Canada; and 4 in U.S. National Museum of Natural History, Washington, D.C.

Etymology.—This species is named for Dr. F. S. Lukoschus, Catholic University, Nijmegen, Netherlands.

Acknowledgments

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Vegetable Laboratory, PGGI, BARC-West, USDA, Beltsville, Maryland 20705 (A. Hill, former research assistant and graduate student from Botany Department, Catholic University, Nijmegen, Netherlands).